

## CLAIMS

1. A method of controlling a compressor operable to compress refrigerant at a variable operation frequency, said method comprising the steps of:

5 (a) allowing the compressor to start operating;

(b) allowing the compressor to operate at a first frequency for a first period of time just after said step (a);

(c) allowing the compressor to operate at a second frequency lower than the first frequency for a second period of time longer than the first  
10 period just after said step (b); and

(d) allowing the compressor to operate at an ordinary operation after said step (c).

2. The method of claim 1, further comprising the steps of:

15 (e) allowing the compressor to operate at a third frequency higher than the second frequency for a third period of time shorter than the second period just after said step (c); and

(f) allowing the compressor to operate at a fourth frequency lower than the first frequency and the third frequency for a fourth period of time  
20 longer than the first period and the third period just after said step (e).

3. The method of claim 2, wherein the first frequency is equal to the third frequency.

25 4. The method of claim 2, wherein the second frequency is equal to the fourth frequency.

5. The method of claim 2, wherein the first period is equal to the third period.

6. The method of claim 2, wherein the second period is equal to the fourth period.

7. The method of claim 2, wherein the fourth period is shorter than the second period.

8. The method of claim 2, wherein the third frequency is higher than the first frequency.

9. The method of claim 2, wherein the third period is not longer than two seconds.

10. The method of claim 2, wherein the third frequency is not lower than 40Hz.

11. The method of claim 2, wherein the fourth frequency is not higher than 35Hz.

12. The method of claim 1, wherein the first period is not longer than two seconds.

13. The method of claim 1, wherein the first frequency is not lower than 40Hz.

14. The method of claim 1, wherein the second frequency is not higher than 35Hz.

15. The method of claim 1,

5            wherein the compressor is operable to contain lubricant and the refrigerant, and

             wherein the refrigerant is hydrocarbon refrigerant excluding chlorine and fluorine, and the lubricant and the refrigerant are mutually soluble with each other.

10

16. A controller for controlling a compressor including

             a compressing element operable to compress refrigerant, and

             a motor element operable to drive the compressing element to operate at a variable operation frequency,

15        said controller comprising:

             a driving section for driving the motor element; and

             a controlling section for controlling the driving section, the controlling section being operable

                 (a) to allow the compressor to start operating,

20

                 (b) to allow the compressor to operate at a first frequency for a first period of time just after said (a) to allowing the compressor to start operating,

                 (c) to allow the compressor to operate at a second frequency lower than the first frequency for a second period of time longer than the first period just after said (b) to allow the compressor to operate at the first frequency for the first period, and

25

                 (d) to allow the compressor to operate at an ordinary

operation after said (c) to allow the compressor to operate at the second frequency for the second period.

17. The controller of claim 16, wherein the controlling section is operable to the driving section, the controlling section being operable

(e) to allow the compressor to operate at a third frequency higher than the second frequency for a third period of time shorter than the second period just after said (c) to allow the compressor to operate at the second frequency for the second period, and

(f) to allow the compressor to operate at a fourth frequency lower than the first frequency and the third frequency for a fourth period of time longer than the first period and the third period just after said (e) to allow the compressor to operate at the third frequency for the third period.

18. The controller of claim 17, wherein the first frequency is equal to the third frequency.

19. The controller of claim 17, wherein the second frequency is equal to the fourth frequency.

20. The controller of claim 17, wherein the first period is equal to the third period.

21. The controller of claim 17, wherein the second period is equal to the fourth period.

22. The controller of claim 17, wherein the fourth period is shorter

than the second period.

23. The controller of claim 17, wherein the third frequency is higher than the first frequency.

5

24. The controller of claim 16,

wherein the compressing element is operable to contain lubricant and the refrigerant, and

wherein the refrigerant is hydrocarbon refrigerant excluding  
10 chlorine and fluorine, and the lubricant and the refrigerant are mutually soluble with each other.

25. A compressor comprising:

an airtight container for accommodating refrigerant and  
15 lubricant;

a compressing element operable to compress the refrigerant, the compressing element being lubricated by the lubricant;

a motor element operable to drive the compressing element to operate at a variable operation frequency;

20 a driving section for driving the motor element; and

a controlling section for controlling the driving section, the controlling section being operable

(a) to allow the compressing element to start operating,

(b) to allow the compressing element to operate at a  
25 first frequency for a first period of time just after said (a) to allow the compressing element to start operating,

(c) to allow the compressing element to operate at a

second frequency lower than the first frequency for a second period of time longer than the first period just after said (b) to allow the compressing element at the first frequency for the first period, and

(d) to allow the compressing element to operate at an  
5 ordinary operation after said (c) to allow the compressing element to operate at the second frequency for the second period.

26. The compressor of claim 25, wherein the controlling section is operable to control the driving section, the controlling section being operable

10 (e) to allow the compressing element to operate at a third frequency higher than the second frequency for a third period of time shorter than the second period just after said (c) to allow the compressing element to operate at the second frequency for the second period, and

(f) to allow the compressing element at a fourth frequency lower  
15 than the first frequency and the third frequency for a fourth period of time longer than the first period and the third period just after said (e) to allow the compressing element to operate at the third frequency for the third period.

20 27. The compressor of claim 26, wherein the first frequency is equal to the third frequency.

28. The compressor of claim 26, wherein the second frequency is equal to the fourth frequency.

25

29. The compressor of claim 26, wherein the first period is equal to the third period.

30. The compressor of claim 26, wherein the second period is equal to the fourth period.

5 31. The compressor of claim 26, wherein the fourth period is shorter than the second period.

32. The compressor of claim 26, wherein the third frequency is higher than the first frequency.

10

33. The compressor of claim 25, further comprising a suction inlet for sucking the refrigerant, the suction inlet opening in the airtight container.

15

34. The compressor of claim 25, wherein the motor element includes  
a rotor having a permanent magnet, and  
a stator having a core including  
a plurality of teeth, and  
a wire wound on the plurality of teeth.

20

35. The compressor of claim 25, wherein the refrigerant is hydrocarbon refrigerant excluding chlorine and fluorine, and the lubricant and the refrigerant are mutually soluble with each other.

25

36. A refrigerating device comprising:  
a compressor as defined in claim 25; and  
a refrigerating cycle through which the refrigerant circulates, the refrigerating cycle being coupled to the compressor, the refrigerating cycle

including a condenser , a decompressor, and an evaporator.

37. The refrigerating device of claim 37, wherein a time when the compressor starts to operate is a first time after a defrosting operation.